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AFOEHL REPORT 90-039EQ00032CHH



# Hazardous Waste Technical Assistance Survey
# Luke AFB AZ

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**March 1990**

**Final Report**



AF Occupational and Environmental Health Laboratory (AFSC)
Human Systems Division
Brooks Air Force Base, Texas 78235-5501

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At the request of 832 Medical Group (TAC)/SGPB, the AFOEHL conducted a hazardous waste technical assistance survey at Luke AFB (LAFB) from 30 Oct - 3 Nov 89. The scope of this survey was to address hazardous waste management practices, explore opportunities for hazardous waste minimization, and to determine possible industrial discharges to the sanitary sewer. The survey team performed a shop-by-shop evaluation of chemical waste management practices as well as met with hazardous waste managers and engineers to discuss the hazardous waste program. Recommendations include: (1) Develop and implement a formalized hazardous waste education and training program; (2) Store waste paints and thinners in smaller containers at 944 CAMS Corrosion Control; (3) Use an alternate absorbent material, such as siliceous-based, for cleaning up small spills; (4) Establish a contract with a local linen contractor for supplying cleaning rags; (5) Use soap rather than PD-680 at 832 CES Power Production for washing generators throughout the base.

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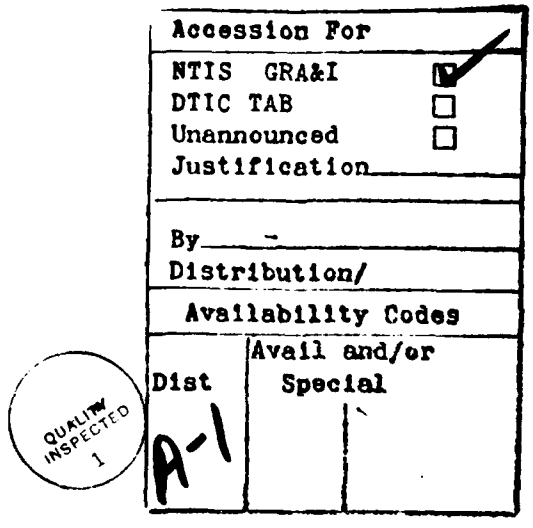

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## I. INTRODUCTION

The 832d Medical Group (TAC)/SGPB requested the Air Force Occupational and Environmental Health Laboratory, Environmental Quality Division (AFOEHL/EQ) conduct a Hazardous Waste Survey at Luke AFB (Request letter is included in Appendix A). The scope of the Hazardous Waste Survey was to determine possible industrial discharges to the sanitary sewer, address hazardous waste management practices and explore opportunities for hazardous waste minimization.

The survey was conducted by Capt Patrick T. McMullen, 2Lt Nancy S. Hedgecock, and AB Tamra F. Dillon from 30 Oct to 3 Nov 89.

## II. BACKGROUND

### A. Base Description

Luke AFB is located in the Valley of the Sun in central Arizona. It is the largest fighter pilot training base in the free world and is the home of the 58 Tactical Training Wing, 405 Tactical Training Wing, and the 944 TAC Fighter Group.

### B. Hazardous Waste Program

The hazardous waste program at Luke AFB is managed primarily through the Environmental and Contract Planning Office in Civil Engineering, 832 CSG/DEV. The Defense Reutilization and Marketing Office (DRMO) is responsible for contractual removal of wastes. Bioenvironmental Engineering Services (BES) help monitor the program through industrial shop surveys and is responsible for waste sampling at the request of DEV.

Individual shops are responsible for identifying, segregating, he ing, packaging, and labeling the wastes generated by their shop. The was are usually placed in a 55-gallon drum or bowser located either at a sat te accumulation site or at an accumulation site.

When wastes require disposal, the generator completes an AF Form 2005 and submits it to Supply. Supply generates a DD Form 1348-1 using the information contained on the AF Form 2005. The DD Form 1348-1 is then approved by the Environmental Coordinator indicating that funds are available for disposal of the waste. Finally, the generator submits the DD Form 1348-1 to DRMO who arranges for a waste disposal contractor to pickup the wastes.

Waste oil is sold to All Western Oil Co. for 3 cents per gallon. Payment received is based on the going rate at the time of disposal. Other wastes are disposed of at a cost to the base.

Wastes are identified by either wastestream analysis or user knowledge before being transferred to the DRMO Storage Facility. BES is responsible for sampling unknown wastes and other wastestreams on an as needed basis. Samples are sent to the AF Occupational and Environmental Health Laboratory, Analytical Services Division (AFOEHL/SA) for analysis. Results are returned to BES who notifies DEV of the results.

## III. PROCEDURE

The first step of the survey was to review the base's hazardous waste management plan and the BES industrial shop folders to determine which shops generate chemical wastes. The next step was to visit 39 industrial shops to observe industrial operations, discuss chemical waste disposal practices with shop personnel, and hand out chemical disposal survey forms (Appendix B). These forms, completed by shop personnel, were reviewed by the survey team and provided additional information for subsequent discussions with shop personnel.

The DRMO Hazardous Waste Storage Facility (HWSF) and each accumulation site were also visited and evaluated. The accumulation site evaluation form is included in Appendix C. The following individuals were contacted to discuss their responsibility and involvement in the hazardous waste program:

1 Lt Thomas, Chief, Bioenvironmental Engineering, SGPB, AV 853-7521
Capt Dixon, Chief, Environmental Quality Branch, AV 853-3621
TSgt Lukas, Hazardous Waste Technician, DEV, AV 853-3621
Mr Forrest, Environmental Coordinator, DEV, AV 853-3621
Mr Adams, Defense Reutilization and Marketing Office, AV 853-7144
Mr Benton, Defense Reutilization and Marketing Office, AV 853-7144

Based on the data from the completed chemical disposal survey forms, the annual forecasted quantities for nine categories of waste were determined (see Table 1). From Table 1, column 3, the majority of the waste, 54%, consists of waste oils and fluids; however, these wastes are not considered hazardous wastes. Seven percent of the total amount of waste generated is drummed and disposed through DRMO. From Table 1, column 5, 52 percent of the hazardous wastes generated are paint wastes. Itemized listings of wastes (including categories, shop, amount of waste, and disposal method) are found in Appendix D. Appendix E contains a list of those wastes drummed for disposal through DRMO as either hazardous or nonhazardous waste.

**TABLE. 1 ANNUAL FORECASTED QUANTITIES FOR WASTE CATEGORIES AT LUKE AFB**

| PRODUCT | TOTAL WASTE (GAL/YR) | %TOTAL | TOTAL DRUMMED WASTE (GAL/YR) | %TOTAL |
|---|---|---|---|---|
| Oils & Fluids | 29632 | 54.2 | 0 | 0 |
| Paints & Thinners | 2125 | 3.9 | 2125 | 51.8 |
| Fuels | 11784 | 21.6 | 84 | 2.1 |
| Solvents | 5953 | 10.9 | 1008 | 24.5 |
| Sodium Hydroxide | 400 | 0.7 | 0 | 0 |
| Antifreeze | 181 | 0.3 | 25 | 0.6 |
| Soaps | 1560 | 2.9 | 0 | 0 |
| Photo & NDI | 2425 | 4.4 | 265 | 6.5 |
| Paclei Gun Cleaner | 600 | 1.1 | 600 | 14.6 |
| TOTAL: | 54660 | | 4107 | |

**IV. DESCRIPTION OF INDUSTRIAL ACTIVITIES:** This section details the results of the shop-by-shop chemical usage and disposal practice survey of the following industrial shops (Appendix F contains a master list of shops surveyed and Appendix G contains a shop-by-shop listing of waste disposal practices):

A. 832 Transportation Squadron (TRANS)

Shop: Allied Trades — Bldg: 291
Contact: Sgt Whitney — AUTOVON: 853-6085

Allied Trades personnel repair and paint vehicle bodies. Waste enamel paint, polyurethane paint, Imron paint, MEK, and paint thinners (160 gallons/year) are drummed, stored at the shop's satellite accumulation site, and disposed as hazardous waste through DRMO. Empty aerosol cans are disposed as municipal waste. Shop rags are taken to linen exchange for cleaning and reissue.

Allied Trades personnel are also responsible for cleaning and maintaining a caustic soda (sodium hydroxide) tank that is used for cleaning radiators. The waste (100 gallons/3 months) is discharged down the drain with copious amounts of water to the sanitary sewer system.

Shop: Refueling Maintenance — Bldg: 353
Contact: MSgt Rork — AUTOVON: 853-6209

Refueling maintenance personnel maintain and repair aircraft refueling vehicles. Waste JP-4 is drained to a 500-gallon underground storage tank. JP-4 is either used at the Fire Training Pit (FTP) for training purposes or disposed as petroleum oils and lubricants (POL) through DRMO. Waste oil and fluid are drummed, stored at the 832 TRANS accumulation site, transferred to the POL Recovery Area waste storage tanks, and disposed through DRMO as POL. Waste antifreeze is drummed, stored at the 832 TRANS accumulation site, and disposed through DRMO. Shop rags are taken to linen exchange for cleaning and reissue.

Shop: Vehicle Maintenance — Bldg: 291
Contact: MSgt Rork — AUTOVON: 853-6216

Shop personnel perform oil changes, lubrication, and routine maintenance on all military vehicles assigned to Luke AFB. Waste motor oil (100 gallons/month), hydraulic fluid (20 gallons/month), transmission fluid (25 gallons/month), and brake fluid (1 gallon/month) are drummed, stored at the shop's accumulation site, transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. Waste MoGas (5 gallons/month) and diesel (2 gallons/month) are drummed, stored at the shop's accumulation site, transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. Batteries are exchanged on a one-for-one basis through Co-Pars. Waste antifreeze (3 gallons/month) is drummed and stored at the shop's accumulation site. The shop is in the process of obtaining an antifreeze recycling unit.

The shop has four, 15-gallon 360 solvent degreasing tanks that are changed out every 3-4 months. The waste is drummed, stored at the shop's accumulation site, transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. Citrikleen (15 gallons/month, diluted 1:8) is used for cleaning shop floors. The waste is discharged down the drain to an oil/water separator connected to the sanitary sewer. If Citrikleen is not available, aircraft soap (diluted 1:8) is used for cleaning the floors. Shop rags are taken to linen exchange for cleaning and reissue. Speedy Dry is disposed as municipal waste.

B. 58 Equipment Maintenance Squadron (58 EMS)

Shop: AGE — Bldg: 930A
Contact: SMSgt Withers — AUTOVON: 853-3463

Shop personnel repair, maintain and dispatch flight line support equipment. Waste oil and fluid (300 gallons/month) are stored in 55-gallon bowsers, transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. AGE personnel are responsible for maintaining the flight line JP-4 bowsers. When full, the bowsers are taken to the POL recovery area and emptied into a waste storage tank. The JP-4 is blended back into the main base fuel supply, used at the FTP for training purposes, or disposed as POL through DRMO.

Calla 800 (55 gallons/month), Citrikleen (250 gallons/month), and aircraft soap are used on the washrack for cleaning equipment. The washrack drains lead to an oil/water separator that is connected to the sanitary sewer system. The oil phase of the separator is pumped into a 250-gallon above-ground storage tank that is periodically pumped out by a contractor. No painting is done in this shop. Shop rags are taken to linen exchange for cleaning and reissue.

Shop: Armament Systems — Bldg: 926
Contact: SMSgt Reid — AUTOVON: 853-7335

Shop personnel maintain bomb racks, gun systems, and weapons release systems for the F-16 aircraft. The shop has a 400-gallon heated Paclei tank used for cleaning 20 mm gun systems. The tank is changed out every three months. All water is boiled off; the residue ( 150 gallons) is drummed and disposed through DRMO. Shop rags are taken to linen exchange for cleaning and reissue.

Shop: Corrosion Control — Bldg: 922
Contact: TSgt Brown — AUTOVON: 853-6797

Shop personnel perform corrosion control treatment and painting on F-16 aircraft, associated aircraft parts and support equipment. Waste polyurethane and enamel paints (55 gallons/month) are drummed, stored at the shop's accumulation site (see Figure 1), and disposed as hazardous waste through DRMO. Waste polyurethane thinner, MEK, and toluene are recycled by shop personnel using a Little Still distillation unit.

The unit is located in a building behind the shop. The shop has a 15-gallon B&B 1567-C stripping tank which is changed out monthly. The waste is drummed, stored at the shop's accumulation site, and disposed as hazardous waste through DRMO.

The shop has a 500-gallon waterfall paint booth that is changed out monthly. The water is discharged down the drain to the sanitary sewer. The dry paint sludge is disposed as municipal waste. Shop rags are disposed as municipal waste.

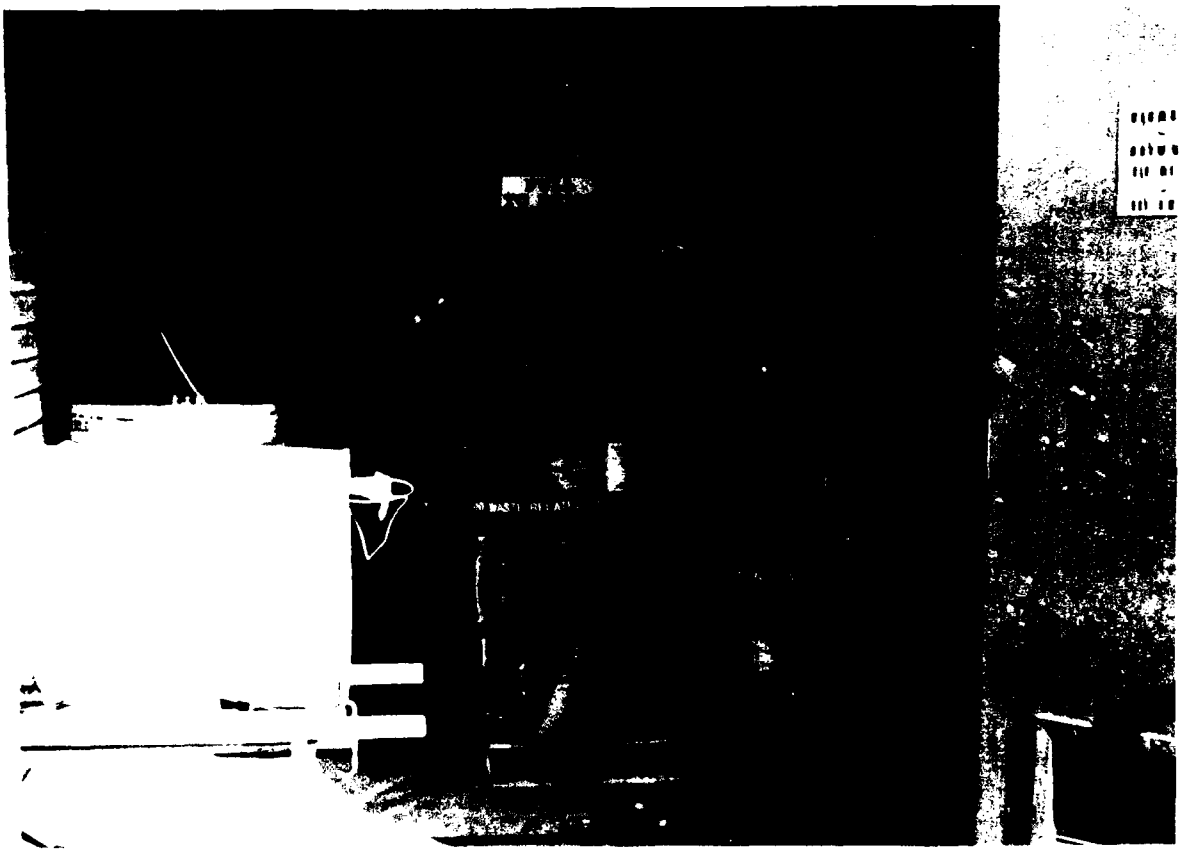

**Figure 1: 58 EMS Corrosion Control Accumulation Site**

Shop: Phase Docks
Contact: MSgt Hairston

Bldg: 985
AUTOVON: 853-387

Shop personnel perform periodic maintenance and inspection on the F-16 aircraft. Waste oil and fluid (<1 gallon/month) are stored in a 55-gallon bowser, transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. Kim-Wipes, used for cleaning up small spills, are disposed as municipal waste. The shop floor drains (located at the front of the shop) are connected to the sanitary sewer.

C. 58 Component Repair Squadron (58 CRS)

Shop: Fuel System Repair — Bldg: 983
Contact: Msgt Byer — AUTOVON: 853-6473

Shop personnel perform routine and unscheduled maintenance on F-16 aircraft fuel systems. JP-4 (45 gallons/month) is vacuumed from the fuel tanks into a bowser. The JP-4 is transferred to the POL Recovery Area waste storage tanks. The JP-4 is recycled into the base fuel supply, used at the FTP for training purposes, or disposed through DRMO as POL. JP-4 that is spilled from the tanks (5-6 gallons/tank) is flushed with water into floor drains connected to an oil/water separator. Shop rags are disposed as municipal waste. Small hydrazine spills are neutralized with bleach and flushed with copious amounts of water.

Shop: Hush House — Bldg: 1016
Contact: TSgt Johnson — AUTOVON: 853-6693

Shop personnel perform field tests and engine rev-ups on the F-100 jet engine. Approximately 30 engines/month are tested. Small quantities of JP-4, oil, and fluid that leak from the engines during testing are flushed with water into floor drains connected to an oil/water separator.

Shop: Jet Engine Maintenance — Bldg: 931
Contact: MSgt Bradford — AUTOVON: 853-6561

Shop personnel perform routine maintenance on the F-100 engine. JP-4 drained from engines is collected in drip pans and transferred to a bowser that is stored at the shop's accumulation site (see Figure 2). Waste mop water is drummed, sampled, analyzed, and disposed of accordingly. Shop rags are taken to linen exchange for cleaning and reissue.

Shop: Pneudraulics — Bldg: 931
Contact: MSgt Etzle — AUTOVON: 853-6760

Shop personnel service, repair, and maintain hydraulic and pneumatic components in the F-16 and F-15 aircraft. Waste hydraulic fluid (10 gallons/month) is collected in a bucket, taken to the AGE shop and transferred to a bowser. PD-680 (100 gallons/month) is also taken to an AGE bowser. Kim-Wipes are disposed as municipal waste.

D. 58 Aircraft Generation Squadron (58 AGS)

Shop: 310 AMU — Bldg: 913
Contact: TSgt Lishka — AUTOVON: 853-6326

Shop personnel maintain and issue tools and equipment and perform flight line maintenance on F-16 aircraft assigned to the 58th Tactical Fighter Wing. Waste oil (200 gallons/month) and JP-4 (400 gallons/month) are collected in 55-gallon bowsers. The bowsers are taken weekly to the POL Recovery Area and emptied into the waste storage tanks. The waste oil is disposed as waste POL through DRMO. The JP-4 is blended back into the main base fuel supply, used at the (FTP) for training purposes, or disposed through DRMO as POL. Speedy Dry is disposed as municipal waste.

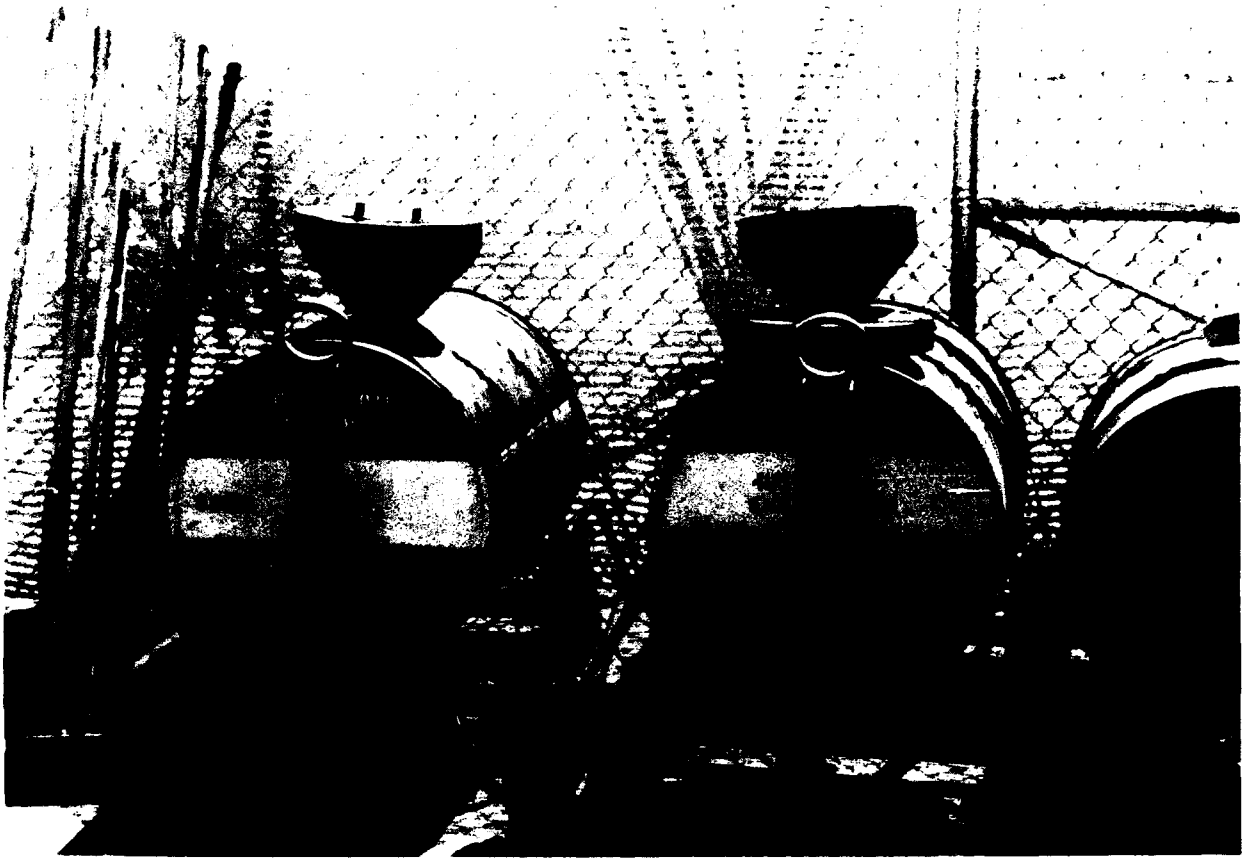

**Figure 2: 58 CRS Jet Engine Maintenance Accumulation Site**

Aircraft are washed on the flight line using approximately 200 gallons of water per washing. Water not evaporated discharges to the stormwater system.

E. 405 Equipment Maintenance Squadron (405 EMS)

Shop: AGE
Contact: MSgt Isgro

Bldg: 404
AUTOVON: 853-3276

Shop personnel repair, maintain, and dispatch flight line support equipment for F-15 aircraft assigned to the 405th Tactical Fighter Wing. Waste oil and fluid are either discharged directly from the equipment into a drain that leads to a 2000-gallon underground storage tank (UST) or drained into drip pans or buckets which are poured into a trough leading to the UST.

The UST is pumped out by a contractor quarterly. The shop has a 17-gallon Citrikleen tank that is usually replenished rather than cleaned out. The top surface is skimmed; the waste is disposed along with waste oil and fluid. Speedy Dry is reused until saturated; the saturated Speedy Dry is disposed through DRMO. Shop rags are taken to linen exchange for cleaning and reissue. Citrikleen and Alfakleen are used for cleaning shop floors and equipment. The shop floor drains are connected to an oil/water separator. Citrikleen (150 gallons/year) and Citrikleen HD (150 gallons/year) are used on the washrack for cleaning parts and equipment.

The shop has a waterfall paint booth that is drained every two months. The water is discharged to an oil/water separator. The dried sludge from the paint booth is disposed as municipal waste. Waste polyurethane paint (55 gallons/year) is drummed and taken to 405 EMS Corrosion Control for disposal with their waste paint.

Shop: Corrosion Control — Bldg: 922
Contact: SSgt Pinto — AUTOVON: 853-6456

Shop personnel perform corrosion control treatment and painting on F-15 aircraft, associated aircraft parts and support equipment. Waste polyurethane paint (55 gallons/month) is drummed, stored at the shops accumulation site, and disposed as hazardous waste through DRMO. Waste polyurethane thinner, MEK, and naphtha thinner are recycled by shop personnel using a Little Still distillation unit. The unit is located in a building behind the shop. The shop has a 15-gallon B&B 1567-C stripping tank which is changed out monthly. The waste is drummed, stored at the shop's accumulation site, and disposed as hazardous waste through DRMO.

The shop has a dry paint booth; the filters (20) are replaced weekly and disposed as municipal waste. Shop rags are disposed as municipal waste.

Shop: NDI — Bldg: 966
Contact: TSgt Chase — AUTOVON: 853-6731

Shop personnel perform inspection of F-16 and F-15 aircraft structural components using dye penetrant, magnetic particle and x-ray inspection methods. Spent x-ray developer (40 gallons/month) is discharged down the drain to the sanitary sewer. Spent x-ray fixer (40 gallons/month) is processed through a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer.

Dye penetrant inspection is an open system which uses penetrant, emulsifier, and developer. The shop is in the process of converting from a lipophilic dye penetrant inspection process to a hydrophilic dye penetrant inspection process. This conversion may reduce the amount of hazardous wastes generated by the shop. Parts are sequentially dipped into the penetrant and the emulsifier then rinsed and allowed to dry. Next, the part is dipped into the developer, passed through a drying oven, inspected, and rinsed. Spent penetrant (110 gallons/year) and emulsifier (110 gallons/year) are drummed and disposed as hazardous waste through DRMO. Spent developer (110 gallons/year) and rinsewater generated during the inspection process are discharged down the drain to an oil/water separator connected to the sanitary sewer. Magnetic particle solution (55 gallons/year) is drummed and disposed through DRMO.

A Baird Atomic Oil Analysis Spectrometer is used to evaluate engine oil from aircraft. 1,1,1-Trichloroethane is used as a wipe on/wipe off process to clean the machine. Waste oil (10 gallons/month) is collected in a 5-gallon can, taken to another shop and transferred to a 55-gallon bowser.

Shop: Phase Docks
Contact: MSgt Deyo

Bldg: 914
AUTOVON: 853-6731

Shop personnel perform periodic maintenance and inspection on the F-15 aircraft. Waste oil and fluid are stored in 55-gallon bowsers maintained by AGE personnel (see Figure 3). It is then transferred to the POL Recovery Area waste storage tanks, and disposed as POL through DRMO. Shop rags are taken to linen exchange for cleaning and reissue. Speedy Dry is reused until saturated, drummed, and disposed through DRMO.

**Figure 3: 405 EMS Phase Dock Waste Oil Bowsers**

Shop: Wheel and Tire
Contact: TSgt Guthrie

Bldg: 400
AUTOVON: 853-6179

Shop personnel assemble, disassemble, and clean wheels and tires for the F-16 and F-15 aircraft. The shop has a 150-gallon caustic solution wheel stripping tank (Fine Organics 8010) that is changed out every six months. The waste is drummed, stored at the shop's accumulation site (see Figure 4) and disposed as hazardous waste through DRMO. The shop also has a 150-gallon PD-680 tank that is changed out every six months. The waste is drummed, stored at the shop's accumulation site, and disposed through DRMO. The shop is in the process of obtaining a bead blasting unit. Bead blasting will eliminate the need for the two chemical tanks. The wheels are cleaned with aerosol Magnaflux before being sent to NDI. The empty aerosol cans are disposed as municipal waste. Shop rags are taken to linen exchange for cleaning and reissue.

The bearing room has one 50-gallon PD-680 tank that is changed out every 30 days. The waste is drummed, stored at the shop's accumulation site, and disposed through DRMO. The shop is in the process of switching from PD-680 to Citrikleen X-PC. The tank will be changed out every 2 1/2 months.

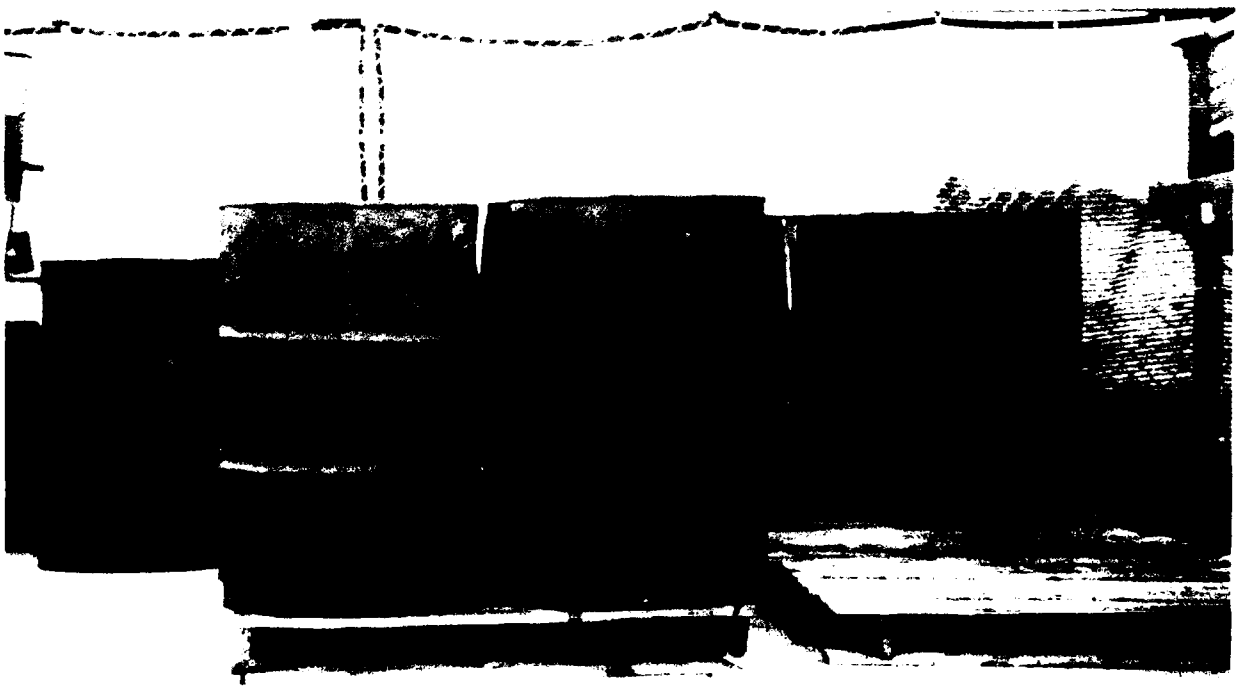

**Figure 4: 405 EMS Wheel and Tire Accumulation Site**

F. 405 Component Repair Squadron (405 CRS)

Shop: Manual Test Station — Bldg: 417
Contact: TSgt Ickes — AUTOVON: 853-7301

Shop personnel maintain and repair F-15 aircraft avionics equipment. Freon-113 is used for cleaning antennae, radar equipment and the test station. The waste freon and rags (100 gallons/year) are drummed and disposed through DRMO.

Shop: Electric — Bldg: 913
Contact: Mr Healis — AUTOVON: 853-6198

Shop personnel maintain and repair batteries used in both the F-15 and F-16 aircraft. Both the 405 CRS Electric shop and the 58 CRS Electric shop operate out of this shop. Lead acid batteries are emptied into a neutralization sink (Figure 5). The electrolyte is neutralized with sodium bicarbonate and tested with litmus paper before being discharged down the drain to a holding tank. The battery casings are disposed through DRMO.

NiCad batteries (3-4 cells/week) are neutralized with boric acid. The neutralized electrolyte is discharged to a holding tank. The spent battery cells are disposed through DRMO.

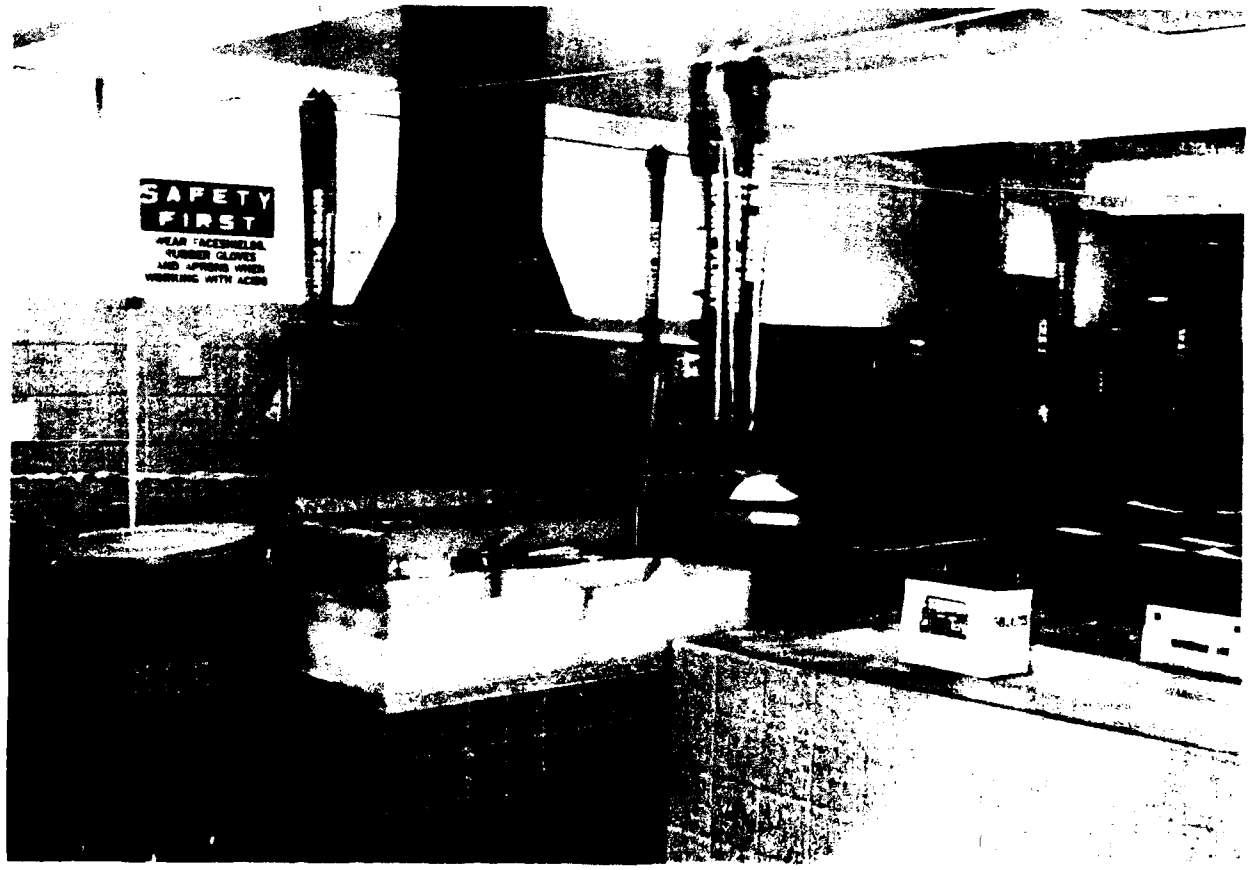


**Figure 5: 405 CRS Electric Lead-Acid Battery Neutralization Sink**

Shop: Jet Engine Maintence — Bldg: 930
Contact: MSgt Jones — AUTOVON: 853-3537

Shop personnel maintain and repair engines for the F-15 aircraft. Small oil and fluid leaks are contained in drip pans and cleaned up with shop rags. The rags are taken to linen exchange for cleaning and reissue. Engine stands are washed at the AGE washrack.

The modular repair section has a 50-gallon degreasing tank containing Citrikleen that is changed out on an as needed basis. The waste is disposed through DRMO. The shop also has four 2-gallon tanks containing carbon remover, PD-680, fingerprint remover, and 7808 engine oil. These tanks are also changed out on an as needed basis.

Shop: Small Gas Turbine — Bldg: 1026
Contact: MSgt Baum — AUTOVON: 853-6050

Shop personnel maintain and repair F-15 aircraft start systems. 7808 engine oil (55 gallons/month) is placed in a 55-gallon bowser, transported to the POL Recovery Area, transferred to a waste storage tank, and disposed through DRMO as POL. The shop has one PD-680 degreasing tank that is replenished as necessary. Shop rags are taken to linen exchange for cleaning and reissue.

G. 405 Aircraft Generation Squadron (405 AGS)

Shop: 426 AMU — Bldg: 482
Contact: MSgt Stroessner — AUTOVON: 853-3324

Shop personnel maintain and issue tools and equipment and perform flight line maintenance on F-15 aircraft assigned to the 405 Tactical Fighter Wing. Waste oil (100 gallons/month) and JP-4 (200 gallons/month) are collected in 55-gallon bowsers (see Figure 6). The bowsers are taken to the POL Recovery Area weekly and emptied into the waste storage tanks. The waste oil is disposed as POL through DRMO. The JP-4 is blended back into the main base fuel supply, used at the FTP for training purposes, or disposed through DRMO as POL. Speedy Dry is disposed as municipal waste.

Aircraft are washed on the flight line using CALLA 800 soap and water. The majority of the water rapidly evaporates; the water that does not evaporate is discharged to the storm drainage system.

H. 944 Consolidated Aircraft Maintenance Squadron (944 CAMS)

Shop: Pneudraulics — Bldg: 999
Contact: TSgt Tuckett — AUTOVON: 853-5521

Shop personnel service, repair, and maintain hydraulic and pneumatic components for the F-16 aircraft. The shop has a 20-gallon solvent tank containing Penetone Formula 724. The waste (approximately 20 gallons/ year) is taken to 944 CAMS AGE and transferred to an oil bowser. Waste hydraulic fluid (2 gallons/year) is collected in a bucket, taken to the 944 CAMS AGE shop and transferred to an oil bowser. Trichlorotrifluoroethane is used as a wipe on/wipe off parts cleaning process. Shop rags are disposed as municipal waste.


**Figure 6: 405 AGS 426 AMU Oil and Fuel Bowsers**

Shop: Fuel System Repair — Bldg: 1022
Contact: MSgt Van — AUTOVON: 853-5562

Shop personnel perform routine and unscheduled maintenance on F-16 aircraft fuel systems. JP-4 is vacuumed from the fuel tanks into a bowser and transported to 944 CAMS AGE. Any fuel that is spilled from the tanks is flushed with water into floor drains connected to an oil/water separator. Shop rags are disposed as municipal waste.

Shop: Propulsion — Bldg: 993
Contact: SMSgt Davis — AUTOVON: 853-5423

Shop personnel are responsible for the teardown, inspection, repair, and reassembly of F-16 engines during scheduled maintenance. Shop personnel work on one engine per month. Small quantities of waste JP-4 and 7808 engine oil (6 gallons/month) are collected in drip pans, taken to the 944 CAMS AGE shop and transferred to a bowser. The shop has one small tank containing a mixture of PD-680 and 7808 engine oil that is used for bearings. The waste is disposed with other waste oil generated by the shop. Shop rags are sent to linen exchange for cleaning and reissue. The shop does not have any floor drains.

Shop: AGE
Contact: SMSgt Harvey

Bldg: 1013
AUTOVON: 853-5556

Shop personnel repair, maintain and dispatch flight line support equipment. Waste oil and fluid (600 gallons/month) and waste fuel (300 gallons/month) are accumulated in 55-gallon bowsers, transferred to the POL Recovery Area waste storage tanks. The oil is disposed as POL through DRMO. The JP-4 is recycled into the main base fuel supply, used for training purposes at the FTP, or disposed as POL through DRMO. Wastes from other 944 CAMS shops are brought to the AGE shop. Batteries are charged and filled at this shop. Electrolyte neutralization is done at the 58 CRS Electric shop. All painting is done at 944 CAMS Corrosion Control. Shop rags are taken to linen exchange for cleaning and reissue.

Shop: Corrosion Control
Contact: TSgt Webber

Bldg: 1013
AUTOVON: 853-5563

Shop personnel perform corrosion control treatment and painting on F-16 aircraft, associated aircraft parts and support equipment. Waste polyurethane paint (55 gallons/year) and lacquer thinner and MEK (55 gallons/year) are stored at the shop's satellite accumulation site, transported to the 944 CAMS accumulation site (see Figure 7), and disposed as hazardous waste through DRMO.

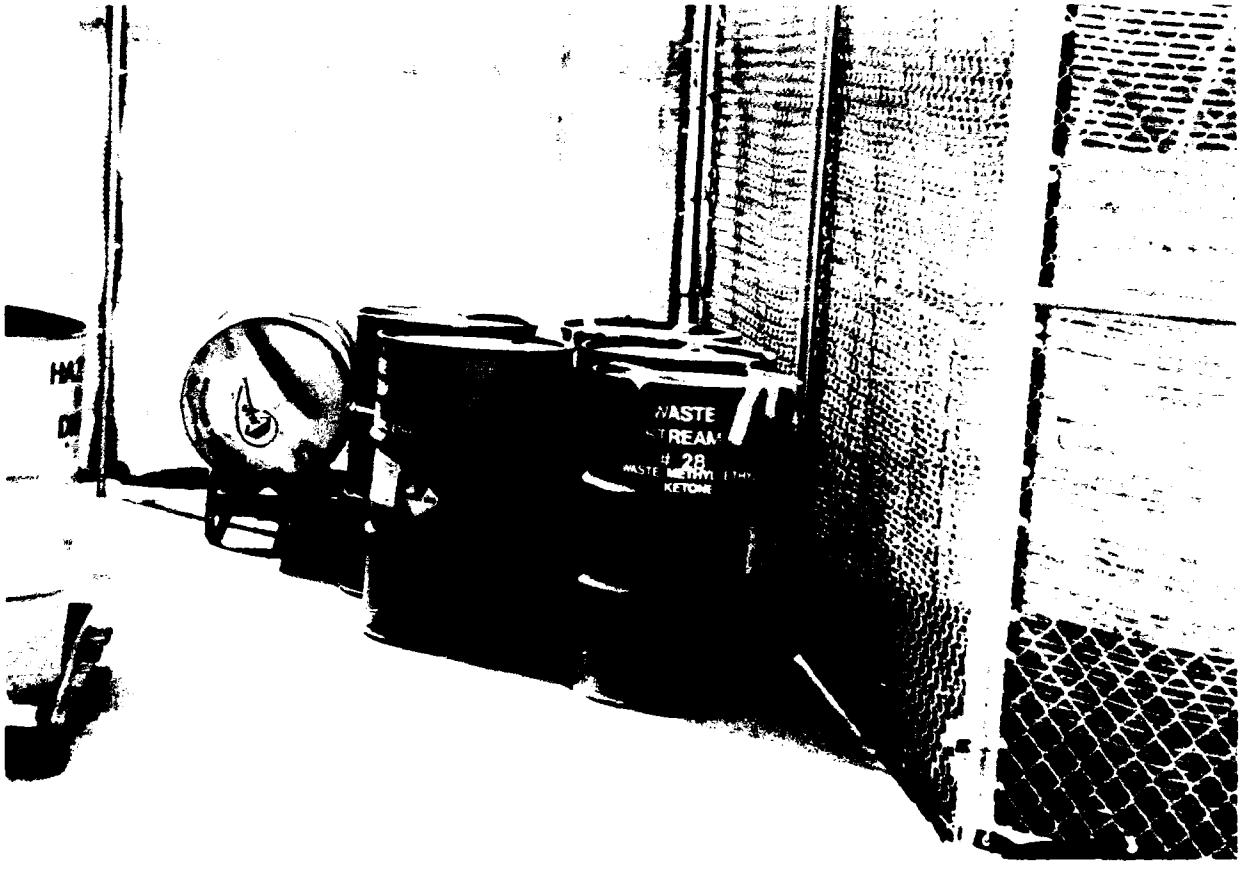

**Figure 7: 944 CAMS Corrosion Control Accumulation Site**

Shop: NDI — Bldg: 1022
Contact: MSgt Livingston — AUTOVON: 853-5544

Shop personnel are in the process of establishing NDI operations for 944 CAMS. Currently, all NDI operations are performed at 405 EMS NDI. The shop will have a dye-penetrant inspection line, magnetic particle inspection, and oil analysis spectrometry. The wastes will be drummed and disposed through DRMO.

Shop: Wheel and Tire — Bldg: 1022
Contact: TSgt Kelley — AUTOVON: 853-5540

Shop personnel are in the process of establishing wheel and tire operations for 944 CAMS. Currently, all wheel and tire work is performed at 405 EMS Wheel and Tire. The shop has three degreasing tanks that will contain Citrikleen X-PC and Citrikleen HD. The wastes will be drummed, taken to the accumulation site at 944 CAMS Corrosion Control, and disposed through DRMO.

Shop: Phase Docks — Bldg: 999
Contact: TSgt Vanderboegh — AUTOVON: 853-5537

Shop personnel perform periodic maintenance and inspection on the F-16 aircraft. Waste oil and fluid (<1 gallon/month) are stored in a 55-gallon bowser, transferred to the AGE shop, and disposed as POL through DRMO. Kim-Wipes, used for cleaning up small spills, are disposed as municipal waste.

I. 832 Civil Engineering Squadron (832 CES)

Shop: Entomolgy — Bldg: 337
Contact: SSgt Nedved — AUTOVON: 853-3961

Shop personnel perform pest and weed control on Luke AFB. Residual chemicals from triple-rinsing procedures are mixed with other chemicals and used in the field. Empty containers are rendered unusable and disposed in a landfill.

Shop: Power Production — Bldg: 360
Contact: Mr Stephens — AUTOVON: 853-6869

Shop personnel operate and maintain diesel powered generators throughout the base. Waste motor oil (55 gallons/month), synthetic oil (15 gallons/month), hydraulic fluid (2 gallons/month), 90 weight motor oil (2 gallons/month), and diesel (5 gallons/month) are stored in a 1000-gallon aboveground tank that is periodically pumped out by a DRMO contractor (see Figure 8). Spent antifreeze (10 gallons/month) is flushed with water down the drain to the sanitary sewer. Spray paint is used for touch-up painting on the equipment. The empty aerosol cans are disposed as municipal waste. Shop rags are disposed as municipal waste. Lead-acid batteries are emptied into a neutralization tank (see Figure 9); the electrolyte is neutralized with baking soda before being discharged to a holding tank. The empty battery casings are disposed through DRMO. A new accumulation site is being constructed at the shop (see Figure 10).

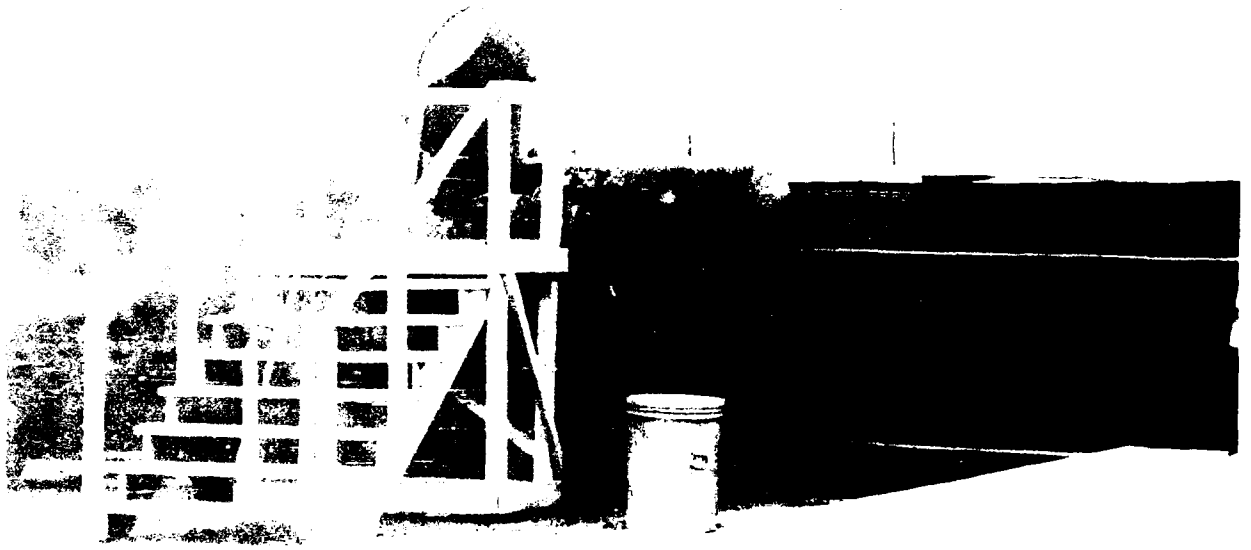

Figure 8: 832 CES Power Production Waste Oil Storage Tank

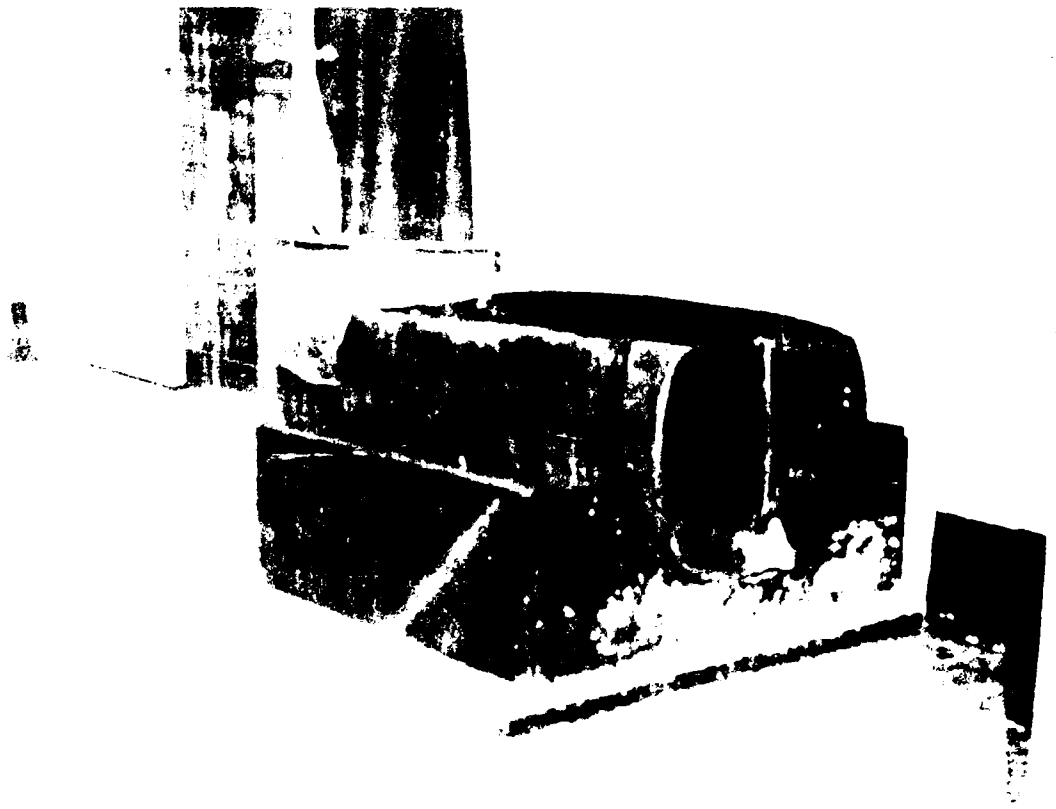

Figure 9. 832 CES Power Production Battery Neutralization Tank

**Figure 10: 832 CES Power Production Accumulation Site**

Shop: Zone 1 - Falcon — Bldg: 921
Contact: TSgt Moore — AUTOVON: 853-3640

Shop personnel perform carpentry, electrical, plumbing, refrigeration and heating work in CES Zone 1. Cutting oil (5 gallons/month) is taken to the POL Recovery Area, transferred to a waste storage tank, and disposed as POL through DRMO.

Shop: Zone 4 - Tiger — Bldg: 339
Contact: Mr McCorry — AUTOVON: 853-6091

Shop personnel perform carpentry, electrical, plumbing, refrigeration and heating work in CES Zone 4. Waste paints and thinners are drummed and disposed as hazardous waste through DRMO. Shop rags are disposed as municipal waste.

J. 832 Medical Group

Shop: Dental X-Ray — Bldg: 1130
Contact: TSgt Brown — AUTOVON: 853-7537

Shop personnel develop x-rays produced at the Dental Clinic. Fixer (5 gallons/month) is processed through a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer. Developer (5 gallons/month) is discharged down the drain to the sanitary sewer.

Shop: Laboratory — Bldg: 1130
Contact: SMSgt Gaines — AUTOVON: 853-7547

Shop personnel perform clinical analysis for the hospital. All chemical reagents are flushed with water down the drain to the sanitary sewer. Xylene is not used.

Shop: Medical X-Ray — Bldg: 1130
Contact: TSgt Bates — AUTOVON: 853-7618

Shop personnel develop x-rays produced at the Hospital. Fixer (40 gallons/month) is processed through a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer. Developer (40 gallons/month) is discharged down the drain to the sanitary sewer.

K. 607 Tactical Control Training Squadron (607 TCTS)

Shop: AGE — Bldg: 1382
Contact: SSgt Duchak — AUTOVON: 853-6431

Shop personnel train tactical control mobile radar personnel. Waste motor oil (20 gallons/year) is taken to 405 AGE and disposed with their waste oil.

L. 832 Morale, Welfare and Recreation (832 MWR)

Shop: Auto Hobby — Bldg: 248
Contact: Mr Arvizu — Autovon: 853-6107

The Auto Hobby Shop contains equipment for maintaining and repairing privately owned vehicles. Waste oil and transmission fluid (350 gallons/month) are stored in 55-gallon drums, tranported to the POL Recovery Area, transferred to the waste storage tanks, and disposed as POL through DRMO. The shop has two 5-gallon degreasing tanks that contain aircraft cleaning soap. The waste is disposed with the waste oil. Waste paint, thinner and batteries are disposed by the patron. The waterfall paint booth is drained one or two times per week. The water is discharged down the drain to an oil/water separator connected to the sanitary sewer. Aircraft cleaning soap (NSN 6850-01-184-8182) is used for cleaning the shop floors. The shop floor drains lead to an oil/water separator connected to the sanitary sewer.

## V. SUMMARY OF WASTE DISPOSAL PRACTICES AT LUKE AFB

The waste disposal practices for different waste categories are summarized in this section. A summary of disposal practices for each waste category is contained in Appendix D.

1. Waste oils and fluids are placed in bowsers, 55-gallon drums or waste oil USTs and disposed as POL through DRMO. The 55-gallon drums and bowsers are transported to the POL Recovery Area and emptied into a waste storage tank. The waste storage tanks and the USTs are emptied by a contractor.

In some cases, waste oils and fluids are discharged to oil/water separators that are periodically cleaned out by a contractor. The 832 CES Power Production shop stores waste oils and fluids in a 1000-gallon bowser that is pumped out by a contractor on-site. Currently, waste oils and fluids are sold to All Western Oil Co. for 3 cents/gallon. The payment received is based on demand at the time of disposal.

2. Waste paints and thinners are generally placed in 5-gallon cans or 55-gallon drums and stored at the appropriate accumulation site. The wastes are sampled by BES personnel before being transported to the DRMO storage facility. Once the waste is characterized, it is transported to the DRMO storage facility for storage until the contractor picks it up.

3. Waste JP-4 and MoGas are generally collected in drip pans or buckets and transferred to fuel bowsers. When full, the bowsers are taken to the POL recovery area and emptied into a waste storage tank. The fuel is analyzed by POL personnel. If possible the fuel is blended back into the main base fuel supply for use in either AGE or aircraft. If not, the fuel is used at the FTP for training purposes or disposed through DRMO as POL.

4. Used lead-acid aircraft or AGE batteries are drained into a plastic sink or drum. The electrolyte is neutralized with sodium bicarbonate before being drained to an UST. Used NiCad aircraft batteries are treated in a similiar manner, except the electrolyte is neutralized with boric acid. The spent battery casings are disposed through DRMO. 832 TRANS vehicle batteries are exchanged on a one-for-one basis through Co-Pars.

5. Some waste solvents (e.g., PD-680 and Citrikleen) are drummed and disposed through DRMO. Other waste solvents (e.g., Citrikleen) are used on washracks; the waste is discharged down the drain to an oil/water separator.

6. Waste fixers are processed through a Peterson Silver Recovery Cell before being discharged down the drain to the sanitary sewer. All other photo chemicals are discharged down the drain to the sanitary sewer.

7. Waste dye-penetrant and emulsifer generated at NDI are drummed and disposed as hazardous waste through DRMO. Waste developer and rinse water are discharged down the drain to an oil/water separator. Magnetic particle solution is drummed and disposed through DRMO.

8. Dirty shop rags from most shops are taken to linen exchange and exchanged for clean ones. A few shops dispose of cloth and paper rags as municipal waste.

9. Paint filters from the dry paint booth at 405 EMS Corrosion Control Shop are disposed as municipal waste.

10. Speedy Dry, used to clean up small spills, is disposed as municipal waste.

11. Water from the 58 EMS Corrosion Control, 832 CSG Auto Hobby and 405 EMS AGE waterfall paint booths is discharged down the drain to an oil/water separator. The dried paint sludge is disposed as municipal waste.

12. Waste mop water from cleaning the floors at the 58 CRS Jet Engine Maintenance is drummed, sampled, analyzed, and disposed according to analytical results.

13. Empty aerosol cans are disposed as municipal waste.

14. Waste antifreeze is stored in 55-gallon drums at the accumulation site and disposed through DRMO. 832 TRANS Vehicle Maintenance is in the process of obtaining an antifreeze recycling unit.

15. Rinsewater generated from triple-rinsing pesticide containers, herbicide containers and cleaning equipment is used for mixing the chemicals.

16. Soaps and cleaning compounds are discharged down the drain to oil/water separators connected to either the sanitary sewer or the storm drainage system.

## VI. CONCLUSIONS

A. DEV is responsible for training shop supervisors, who, in turn, train shop personnel in hazardous waste management. In the past, the training program was given at sporadic intervals. Additional training is scheduled for the future.

B. Luke AFB is in the process of obtaining a RCRA Part B permit for the DRMO storage facility. The Part B permit will require that 25% of the drummed wastes from each wastestream be sampled and analyzed.

C. The Arizona Department of Environmental Quality requires that wastestream characterizations be performed before the waste is transported to the DRMO storage facility. This is required because DRMO is located approximately two miles off base; transportation to DRMO occurs on public roads.

D. DRMO inspects waste storage containers at the accumulation sites before they are transported to the DRMO storage facility.

E. DRMO is in the process of establishing a profile sheet for each wastestream. The profile sheets will allow the base to establish documented rationale for classifying each wastestream as either hazardous or nonhazardous, in addition to meeting Resource Convervation and Recovery Act (RCRA) requirements. The sheets will also provide documentation of the percentage of drums sampled. It should also eliminate the need to sample and analyze all wastes leaving the base.

F. 58 EMS Corrosion Control has a Little Still solvent distillation unit (capacity 30 gallons/12 hours) that is used by both 405 EMS and 58 EMS Corrosion Control for recycling paint thinners. The recycled thinners are used for cleaning painting equipment. The distillation unit has eliminated the need for disposing waste thinners.

G. Most shops utilize the service of a local linen contractor for cleaning dirty rags.

H. 405 EMS NDI, 832 Medical Group Dental X-Ray and Medical X-Ray use Peterson Silver Recovery Cells rather than the usual silver recovery unit. This process requires much less space in the developing room and supposedly recovers more silver from the fixer than the usual process.

## VII. RECOMMENDATIONS

A. A formalized hazardous waste education and training program should be implemented at Luke AFB. The program should provide opportunities for inputs from the BEE shop on the health hazards associated with hazardous wastes and materials since many shop personnel are physically involved with their handling. Also, DRMO should provide input on the present and future costs to the base of disposing hazardous wastes and the required turn-in procedures. DEV should insure that all hazardous waste monitors receive training before assuming the position.

B. 944 CAMS Corrosion Control should consider using smaller containers for storing waste paints and thinners. In order to be considered a satellite accumulation site, the shop must ensure that no more than 55 gallons of waste are stored at the shop at any one time. Also, 58 EMS Corrosion Control should be contacted to discuss the possibility of using the thinner distillation unit for recycling paint thinners.

C. All shops that use Speedy Dry should consider using an alternate absorbent material such as one that is siliceous-based. This type absorbent material reduces clean up time, is more absorbent, and reduces quantity of waste generated.

D. All shops on base should consider the possibility of establishing a contract with the local linen contractor for supplying cleaning rags. This option may not be feasible in all situations but may prove to be cost beneficial in others.

E. 832 CES Power Production should consider using biodegradable detergent rather than PD-680 when washing generators at various locations throughout the base. Eventually, the PD-680 usage could cause soil contamination around the generators.

F. Civil Engineering should ensure that all oil/water separators are connected to the sanitary sewer rather than the storm drainage system. The oil/water separators should also be routinely inspected and cleaned out. If the separators are full or are not working properly, the waste is discharged directly to the sanitary sewer system or the storm drainage system.

G. The used paint filters from 405 EMS Corrosion Control should be sampled and analyzed to determine whether or not they are hazardous. If they prove to be nonhazardous, the filters can continue to be disposed as municipal waste.

H. Spent chemicals from the dye penetrant and magnetic particle inspection processes at 944 CAMS NDI and 405 EMS NDI should be sampled and analyzed to determine which ones are actually hazardous. If any of the wastes are not hazardous, they can be disposed of down the drain or as POL, whichever is applicable.

I. Spent Paclei from the 58 EMS Armament gun cleaning tank should be sampled and analyzed for toxic metals to determine if it is actually hazardous. If the waste is not hazardous, it can be discharged down the drain to the sanitary sewer.

J. The water and sludge from the waterfall paint booths at 58 EMS Corrosion Control, 405 EMS AGE, and 832 MWR Auto Hobby shop should be sampled and analyzed for toxic metals to provide documentation of whether the wastes are hazardous or nonhazardous.

K. The spent Citrikleen from 944 CAMS Wheel and Tire and 405 EMS Wheel and Tire should be sampled and analyzed for toxic metals to determine if it is hazardous. The sludge layer should be sampled separately from the liquid layer. This sampling procedure might prove that only the sludge portion is hazardous and would reduce the amount of hazardous waste generated.

L. The spent bead blasting media from 405 EMS Wheel and Tire should be analyzed for EP Toxicity Metals to determine if it is hazardous. If the waste is nonhazardous, it can be disposed as municipal waste.

M. Civil Engineering personnel should determine where the neutralized battery electrolyte from 832 CES Power Production and 405 CRS Electric is discharged to. The neutralized electrolyte should be sampled and analyzed for toxic metals and pH. If the waste is not hazardous it can be discharged down the drain to the sanitary sewer.

N. The caustic soda tank at 832 TRANS Vehicle Maintenance should be sampled and analyzed for toxic metals and pH before it is discharged down the drain to the sanitary sewer.

O. Drip pans should be placed under bowsers to contain small leaks and spills.

P. Waste storage containers should be locked to prevent cross-contamination of wastes. Also, accumulation site managers should document the waste storage container contents in a log. This log should contain: (1) a unique sequence number to identify which wastestream generated the waste (each wastestream in a shop should have a unique number); (2) date, type, and amount of waste put into the drum (see Table 2 for example); (3) start and stop dates of filling each drum; and (4) name and signature of person putting the waste in the container. Also, a uniform system of documentation should be used by all site managers on base. This type of log can provide documented rationale for substituting user's knowledge for analytical results for waste disposal.

**TABLE 2. Example Hazardous Waste Disposal Log**

PAINT SHOP HAZARDOUS WASTE DISPOSAL
LOG FOR DRUM NUMBER: 1

| Date | Type of Waste | Amount of Waste | Name & Signature |
|---|---|---|---|
| 10 Jun 89 | Enamel Paint | 1 qt | |
| 10 Jun 89 | MEK | 1 gal | |
| 15 Jun 89 | MEK | 1 gal | |
| 20 Jun 89 | Polyurethane Paint | 1 qt | |
| 25 Jun 89 | Polyurethane Thinner | 1 gal | |
| 30 Jun 89 | MEK | 10 gal | |
| 5 Jul 89 | Enamel Paint | 1 qt | |
| 6 Jul 89 | MEK | 2 gal | |
| 6 Jul 89 | Enamel Paint | 1 qt | |
| 7 Jul 89 | MEK | 2 gal | |
| 8 Jul 89 | MEK | 2 gal | |
| 9 Jul 89 | MEK | 2 gal | |
| 11 Jul 89 | MEK | 2 gal | |
| 13 Jul 89 | Enamel Paint | 1 qt | |
| 13 Jul 89 | MEK | 2 gal | |
| 14 Jul 89 | MEK | 2 gal | |
| 16 Jul 89 | Enamel Paint | 1 qt | |
| 16 Jul 89 | MEK | 5 gal | |
| 18 Jul 89 | Polyurethane Paint | 2 qts | |
| 18 Jul 89 | Polyurethane Thinner | 3 gal | |
| 20 Jul 89 | MEK | 4 gal | |
| 21 Jul 89 | MEK | 1 gal | |
| 28 Jul 89 | Enamel Paint | 1 gal | |
| 28 Jul 89 | MEK | 7 gal | |
| | TOTAL: | 50 gal | |

Amounts:

| | | |
|---|---|---|
| MEK | 43.00 gal | 86.00% |
| Polyurethane Thinner | 4.00 gal | 8.00% |
| Enamel Paint | 2.25 gal | 4.50% |
| Polyurethane Paint | 0.75 gal | 1.50% |

## References

1. Samplers and Sampling Procedures for Hazardous Waste Streams, EPA-600/2-80-018, Jan 1980.

2. United States Environmental Protection Agency, "Identification and Listing of Hazardous Waste," 40 CFR 261.

# APPENDIX A

## Request Letter

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Bldg Dep
Action EQ

# DEPARTMENT OF THE AIR FORCE

832D MEDICAL GROUP (TAC)
LUKE AIR FORCE BASE, AZ 85309-5300

REPLY TO
ATTN OF: SGPB

28 July 1989

SUBJECT: Request for Assistance of AFOEHL Wastewater Team

TO: HQ TAC/SGPB
~~AFOEHL/EC~~
IN TURN

1. Luke AFB requests the support of the AFOEHL in the form of a wastewater Characterization Study, to be scheduled at the earliest possible date. This study is needed to identify the sources of various contaminants present in both stormwater and sanitary sewage, and to locate sites of cross connection between these two streams.

2. Luke is currently in application for renewal of its sewage treatment plant NPDES permit. One of the conditions for renewal is thorough characterization of potential industrial discharges to the sanitary sewage system. EPA representatives have made it clear that effluent limit exceedances, which have been fairly common, will have to be tracked down under the new permit.

3. A concurrent issue is the potential discharge, by various means, of industrial wastes into the stormwater drainage system. This may be occurring through the normal routes of leaks, spills and unauthorized dumping, but we strongly suspect that it is also caused by cross-connections. Because of an incident several months ago, our stormwater discharge is being closely watched by the local regulators, and the coming stormwater discharge permitting system will only intensify this scrutiny.

4. Recent publicity caused by the EPA and Arizona Department of Environmental Quality's apparent "get tough on Luke" policy is additional impetus to resolve these problems. Although we know that OEHL's wastewater team has a very full agenda, we would appreciate your earliest possible assistance. If you need more documentation or have any questions, please call me at AV 853-7521.

Alan C Thomas

ALAN C. THOMAS, 1 Lt, USAF, BSC
Chief, Bioenvironmental Engineering Svs

1st IND., HQ TAC/SGPB

15 AUG 1989

TO: USAF OEHL/CC

Forwarded for your action. OEHL support of this request will be greatly appreciated.

Jerry P. Dougherty

JERRY P. DOUGHERTY, COLONEL, USAF, BSC



Readiness is our Profession

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APPENDIX B

Chemical Disposal Survey Form

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**PLEASE RETURN THIS FORM TO LT THOMAS AT 832 MED GROUP/SGPB BY 8 NOV 89**

SHOP: BLDG:

CONTACT: AUTOVON:

Please fill out this form as accurately and completely as possible. If you have any questions on filling it out, please call Lt Hedgecock at X7521.

**Examples:**

| | Tank Capacity | Change Out Frequency | Method of Disposal |
|---|---|---|---|
| PD-680 used in tank | 60 gal | 4/year | 55-gal drum |

Comments: 1/2 gal of MEK per month is used as a wipe on/wipe off process for parts cleaning. None is disposed of.

**OILS & FLUIDS**

| | Amt of Waste | Disposal Method |
|---|---|---|
| Brake Fluid | 6 gal | placed in |
| Transmission Fluid | 10 gal | same 600-gal |
| Hydraulic Fluid | 3 gal | bowser |
| Motor Oil | 50 gal | 500-gal UGT |
| Synthetic Oil | 8 gal | 55-gal drum |

**QUESTIONS:** If question does not apply to this shop put "N/A" beside it.

1. Does this shop have any underground storage tanks?_____

   If yes: How many?_____

   Capacity?_____

   What is stored in the tank?_____

_____

   How often is it cleaned out?_____

   Has it ever been leak-tested?_____

2. Do the floor drains of the shop lead to an oil/water separator?_____

   If yes: How often is it cleaned out?_____

3. Does the shop have any Safety Kleen units?_____

   If yes: How many?_____

   Tank capacity?_____

   How often are they serviced?_____

4. What does the shop do with dirty rags?_____

   _____

5. What does the shop do with used "Speedy Dry"?_____

   _____

6. Describe shop activities and responsibilities below:

**PAINT WASTE AND THINNERS**

| **PAINTS** | Amount of Waste generated/month | Disposal Method |
|---|---|---|
| Latex | | |
| Polyurathane | | |
| Enamel | | |
| Other | | |
| Comments | | |

**THINNERS** (list below)

**STRIPPERS**

| Name of Stripper | National Stock # | Amount of Waste per Month | OR Tank Size | Change Out Freq |
|---|---|---|---|---|

Comments

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**ACIDS**

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| Name of Acid | Manufacturer | Amount of Waste generated/month | Method of Disposal |
|---|---|---|---|

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Comments

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**BATTERIES**

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| Type of Battery | #/Month | Neutralized in Shop or Turned in Wet |
|---|---|---|

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Comments:

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**SOAPS/CLEANERS**

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| Name of Soap | Dilution Ratio | National Stock# | Amt Used / month | Disposal Method |
|---|---|---|---|---|

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Comments

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**OILS AND FLUIDS**

---

| | Amt. of Waste Generated/month | Disposal Method |
|---|---|---|
| Brake Fluid | | |
| Transmission Fluid | | |
| Hydraulic Fluid | | |
| Motor Oil | | |
| Synthetic Oil | | |
| Other | | |
| Comments | | |

**SOLVENTS/DEGREASANTS**

| Name of Chemical | Amt. of Waste generated/mo. | OR Tank Size | Change Out Freq | Disposal Method |
|---|---|---|---|---|
| Carbon Remover | | | | |
| PD-680 used in tank | | | | |
| Pd-680 used on washrack | | | | |
| Other: | | | | |
| | | | | |
| Comments | | | | |

**PHOTO CHEMICALS**

| Name of Chemical | Manufacturer | Amt/mo | OR Tank Size | Change Out freq | Disposal Method |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

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Is the fixer processed through a silver recovery unit before disposal?_____

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**NDI Chemicals**

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| Name of Chemical | Manufacturer | National Stock # | Tank Size | Change Out Freq | Disposal Method |
|---|---|---|---|---|---|
| Emulsifier | | | | | |
| Dye Penetrant | | | | | |
| Developer | | | | | |

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Comments

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**FUELS**

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| Name of Fuel | Amount/Month | Disposal Method |
|---|---|---|
| | | |
| | | |
| | | |

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**ANTIFREEZE**

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| | Amount/Month | Disposal Method |
|---|---|---|
| | | |

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**OTHER CHEMICALS** (Please list any chemicals that contain phenols)

| Name of Chemical | Manufacturer | National Stock # | Tank Size | Change Out Freq | Disposal Method |
|---|---|---|---|---|---|
| | | | | | |

**Signature of person filling out this form**_____

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# APPENDIX C

## Accumulation Site Survey Form

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## HAZARDOUS WASTE ACCUMULATION SITE INSPECTION FORM

LOCATION: _____ DATE: _____

ACCUMULATION SITE MANAGER: _____ PHONE: _____

| ITEM | CONDITIONS | STATUS YES | STATUS NO | COMMENTS |
|---|---|---|---|---|
| STORAGE SITE | Secure | | | |
| | Gates Locked | | | |
| | Warning Signs | | | |
| | No smoking | | | |
| | Impermeable Floor | | | |
| | Diked/Burmed | | | |
| | Valve in Burm to drain water | | | |
| SPILL EQUIPMENT | Empty Overpack Container | | | |
| | Materials and Supplies | | | |
| FIRE PROTECTION | Extinguisher | | | |
| STORAGE CONTAINERS | Funnels in Containers | | | |
| | Containers Closed | | | |
| | Deteriorating | | | |
| | Leaking | | | |
| | Spills | | | |

Overall Rating of Accumultion Site: _____

LISTING OF WASTES AT ACCUMULTION SITE

| EPA WASTE NUMBER | NUMBER OF CONTAINERS | TYPE OF WASTE | ACCUMULATION START DATE | COMMENTS |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
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# APPENDIX D

## Summary of Waste Disposal Practices for Each Waste Category

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SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY

WASTE: Oil and Fluid

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 832 CES Zone 1 | Cutting Oil | 60 | POL |
| 58 AGS 310 AMU | 7808 Oil | 2400 | POL |
| 58 CRS Hush House | Hydraulic Fluid | - | OWS |
| 832 TRANS Refueling Maint | Oil & Fluid | - | POL |
| 944 CAMS Propulsion | PD-680 & 7808 Oil | 10 | POL |
| 405 CRS Jet Engine Maint | 7808 Oil | 4 | POL |
| 832 MWR Auto Hobby | Oil & Fluid | 4000 | POL |
| 58 EMS AGE | Oil & Fluid | 3600 | POL |
| 832 TRANS Vehicle Maint | Hydraulic Fluid | 240 | POL |
| 832 TRANS Vehicle Maint | Transmission Fluid | 300 | POL |
| 832 TRANS Vehicle Maint | Brake Fluid | 12 | POL |
| 405 EMS NDI | Oil | 120 | POL |
| 405 CRS Small Gas Turbine | 7808 Oil | 60 | POL |
| 405 EMS AGE | Oil & Fluid | 7500 | POL |
| 832 TRANS Vehicle Maint | Motor Oil | 1200 | POL |
| 58 EMS Phase Dock | Oil & Fluid | 12 | POL |
| 405 EMS Phase Dock | Oil & Fluid | - | POL |
| 58 CRS Pneudraulics | Hydraulic Fluid | 120 | POL |
| 405 AGS 426 AMU | 7808 Oil | 1200 | POL |
| 832 CES Power Production | Motor Oil | 660 | POL |
| 832 CES Power Production | 90 WT Oil | 24 | POL |
| 944 CAMS AGE | Oil & Fluid | 7200 | POL |
| 944 CAMS Pneudraulics | Hydraulic Fluid | 2 | POL |
| 832 CES Power Production | 7808 Oil | 180 | POL |
| 944 CAMS Propulsion | Oil | 72 | POL |
| 944 CAMS Phase Docks | Oil & Fluid | 12 | POL |
| 58 CRS Hush House | Oil | - | OWS |
| 607 TCTS AGE | Motor Oil | 20 | POL |
| 832 CES Power Production | Hydraulic Fluid | 24 | POL |

TOTAL: 29632

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: Paint, Thinner, and Filters

| SHOP | WASTEE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 58 EMS Corrosion Control | Polyurethane Paint | 660 | DRMO |
| 832 CES Zone 4 | Paint and Thinner | - | DRMO |
| 944 CAMS Corrosion Control | Thinners | 55 | DRMO |
| 405 EMS Wheel & Tire | Fine Organics 8010 | 300 | DRMO |
| 405 EMS Corrosion Control | Filters | 960* | MW |
| 405 EMS Corrosion Control | Thinners | - | REC |
| 832 TRANS Allied Trades | Paint & Thinner | 160 | DRMO |
| 58 EMS Corrosion Control | Thinners & MEK | - | REC |
| 405 EMS Corrosion Control | Polyurethane Paint | 660 | DRMO |
| 944 CAMS Corrosion Control | Polyurethane Paint | 55 | DRMO |
| 58 EMS Corrosion Control | B&B 1567-C | 180 | DRMO |
| 405 EMS Corrosion Control | B&B 1567-C | 90 | DRMO |
| 405 EMS AGE | Polyurethane Paint | 55 | DRMO |
| | TOTAL: | 2215 | |

* - indicates # Filters/Yr

WASTE: Fuel

| SHOP | WASTE | QTY(GAL/YR | DISPOSAL |
|---|---|---|---|
| 58 AGS 310 AMU | JP-4 | 4000 | REC |
| 944 CAMS Fuel System Repair | JP-4 | - | REC |
| 58 CRS Jet Engine | JP-4 | - | REC |
| 832 CES Power Production | Diesel | 60 | POL |
| 832 TRANS Vehicle Maint | Diesel | 24 | DRMO |
| 832 TRANS Vehicle Maint | MoGas | 60 | DRMO |
| 58 CRS Fuel System Repair | JP-4 | 540 | REC |
| 58 CRS Fuel System Repair | JP-4 | 300 | OWS |
| 832 TRANS Refueling Maint | JP-4 | - | REC |
| 944 CAMS Propulsion | JP-4 | - | REC |
| 405 AGS 426 AMU | JP-4 | 2400 | REC |
| 944 CAMS AGE | Fuel | 3600 | REC |
| 58 CRS Hush House | JP-4 | - | OWS |
| | TOTAL: | 11784 | |

WASTE: Soap

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 405 EMS AGE | Alfakleen | - | OWS |
| 58 EMS AGE | Aircraft Soap | - | OWS |
| 58 EMS Armament Systems | Paclei | 600 | D |
| 58 EMS AGE | Calla 800 | 660 | OWS |
| 832 MWR Auto Hobby | Aircraft Soap | 300 | OWS |
| 405 AGS 426 AMU | Calla 800 | - | DD |
| | TOTAL: | 1560 | |

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: Solvent

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 405 CRS Manual Test Station | Freon-113 | 100 | DRMO |
| 405 EMS NDI | 1,1,1 TCA | - | UIP |
| 405 EMS Wheel & Tire | PD-680 | 600 | DRMO |
| 405 EMS AGE | Citrikleen HD | 150 | OWS |
| 405 EMS AGE | Citrikleen | - | POL |
| 58 EMS AGE | Citrikleen | 3000 | OWS |
| 405 CRS Jet Engine Maint | Citrikleen | - | DRMO |
| 832 TRANS Vehicle Maint | Citrikleen | 100 | OWS |
| 944 CAMS Pneudraulics | Penetone Formula 724 | 20 | POL |
| 405 CRS Jet Engine Maint | Carbon Remover | 4 | DRMO |
| 405 EMS Wheel & Tire | PD-680 | 300 | DRMO |
| 405 EMS AGE | Citrikleen | - | OWS |
| 58 CRS Pneudraulics | PD-680 | 1200 | POL |
| 944 CAMS Pneudraulics | Solvent | - | UIP |
| 832 TRANS Vehicle Maint | 360 Solvent | 240 | POL |
| 405 CRS Jet Engine Maint | Fingerprint Remover | 4 | DRMO |
| 405 EMS AGE | Citrikleen | 150 | OWS |
| 405 CRS Jet Engine Maint | PD-680 | 5 | POL |
| 405 EMS Wheel & Tire | Magnaflux | - | UIP |
| | TOTAL: | 5953 | |

WASTE: Antifreeze

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 832 TRANS Vehicle Maint | Antifreeze | 36 | REC |
| 832 CES Power Production | Antifreeze | 120 | DD |
| 832 TRANS Refueling Maint | Antifreeze | - | DRMO |
| 832 MWR Auto Hobby | Antifreeze | 25 | DRMO |
| | TOTAL: | 181 | |

WASTE: Battery Electrolyte

| SHOP | WASTE | QTY(#/YR) | DISPOSAL |
|---|---|---|---|
| 405 CRS Electric | NiCad | 200 | HT |
| 405 CRS Electric | Sulfuric Acid | - | HT |
| 832 TRANS Vehicle Maint | Batteries | - | REC |
| | TOTAL: | 200 | |

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: NDI and Photo

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 405 EMS NDI | X-Ray Developer | 400 | OWS |
| 832 Med Grp Dental X-Ray | X-Ray Fixer | 60 | SRDD |
| 832 Med Grp Medical X-Ray | X-Ray Fixer | 480 | SRDD |
| 405 EMS NDI | Developer | 100 | DD |
| 405 EMS NDI | Penetrant | 110 | DRMO |
| 405 EMS NDI | Emulsifier | 110 | DRMO |
| 832 Med Grp Dental X-Ray | X-Ray Developer | 60 | DD |
| 832 Med Grp Medical X-Ray | X-Ray Developer | 480 | DD |
| 405 EMS NDI | Mag Part Soln | 55 | DRMO |
| 405 EMS NDI | X-Ray Fixer | 480 | SRDD |
| | TOTAL: | 2425 | |

WASTE: Speedy Dry

| SHOP | WASTE | DISPOSAL |
|---|---|---|
| 58 AGS 310 AMU | Speedy Dry | MW |
| 405 AGS 426 AMU | Speedy Dry | MW |
| 405 EMS Phase Dock | Speedy Dry | DRMO |
| 405 EMS AGE | Speedy Dry | DRMO |
| 832 TRANS Vehicle Maint | Speedy Dry | MW |

WASTE: Rags

| SHOP | WASTE | DISPOSAL |
|---|---|---|
| 405 EMS Wheel & Tire | Rags | LE |
| 58 CRS Pneudraulics | Kim-Wipes | MW |
| 58 EMS AGE | Rags | LE |
| 832 CES Zone 4 | Rags | MW |
| 58 EMS Armament | Rags | LE |
| 832 TRANS Vehicle Maint | Rags | LE |
| 832 TRANS Allied Trades | Rags | LE |
| 944 CAMS Propulsion | Rags | LE |
| 58 CRS Fuel System Repair | Rags | MW |
| 58 CRS Jet Engine | Rags | LE |
| 58 EMS Phase Dock | Kim-Wipes | MW |
| 405 EMS Corrosion Control | Rags | MW |
| 405 CRS Jet Engine Maint | Rags | LE |

SUMMARY OF WASTE DISPOSAL PRACTICES FOR EACH WASTE CATEGORY (Cont'd)

WASTE: Rags (Cont'd)

| SHOP | WASTE | DISPOSAL |
|---|---|---|
| 405 EMS Phase Dock | Rags | LE |
| 405 CRS Small Gas Turbine | Rags | LE |
| 944 CAMS AGE | Rags | LE |
| 944 CAMS Pneudraulics | Rags | MW |
| 944 CAMS Phase Docks | Kim-Wipes | MW |
| 832 CES Power Production | Rags | MW |
| 58 EMS Corrosion Control | Rags | MW |
| 944 CAMS Fuel System Repair | Rags | MW |
| 832 TRANS Refueling Maint | Rags | LE |
| 405 EMS AGE | Rags | LE |

WASTE: Sodium Hydroxide

| SHOP | WASTE | QTY(GAL/YR) | DISPOSAL |
|---|---|---|---|
| 832 TRANS Allied Trades | Sodium Hydroxide | 400 | DD |
| | TOTAL: | 400 | |

WASTE: Mop Water

| SHOP | WASTE | DISPOSAL |
|---|---|---|
| 58 CRS Jet Engine | Mop Water | D |

LEGEND:

| | |
|---|---|
| DRMO | DRUMMED AND DISPOSED THROUGH DRMO |
| SRDD | SILVER RECOVERY THEN DOWN DRAIN |
| NDD | NEUTRALIZED THEN DOWN DRAIN |
| POL | DISPOSED AS POL |
| UIP | USED IN PROCESS |
| OWS | OIL/WATER SEPARATOR |
| REC | RECYCLED |
| MW | MUNICIPAL WASTE |
| DD | DOWN DRAIN |
| LE | LINEN EXCHANGE |
| HT | HOLDING TANK |
| D | DRUMMED AND DISPOSED ACCORDING TO ANALYTICAL RESULTS |

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# APPENDIX E

## Summary of Wastes Drummed and Disposed through DRMO

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## WASTES DRUMMED AND DISPOSED THROUGH DRMO

### Type of Waste: Paint And Thinner

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 832 TRANS Allied Trades | 291 | Paint & Thinner | 160 |
| 405 EMS Wheel & Tire | 400 | Fine Organics 8010 | 300 |
| 832 CES Zone 4 | 339 | Paint and Thinner | - |
| 405 EMS Corrosion Control | 922 | Polyurethane Paint | 660 |
| 944 CAMS Corrosion Control | 1018 | Polyurethane Paint | 55 |
| 58 EMS Corrosion Control | 922 | Polyurethane Paint | 660 |
| 58 EMS Corrosion Control | 922 | B&B 1567-C | 180 |
| 405 EMS Corrosion Control | 922 | B&B 1567-C | 90 |
| 944 CAMS Corrosion Control | 1018 | Thinners | 55 |
| 405 EMS AGE | 404 | Polyurethane Paint | 55 |
| | | TOTAL: | 2215 |

### Type of Waste: Gun Cleaner

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 58 EMS Armament | 926 | Paclei | 600 |
| | | TOTAL: | 600 |

### Type of Waste: Solvent

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 405 CRS Manual Test Station | 417 | Freon-113 | 100 |
| 405 CRS Jet Engine Maintenance | 930 | Fingerprint Remover | 4 |
| 405 CRS Jet Engine Maintenance | 930 | Carbon Remover | 4 |
| 405 CRS Jet Engine Maintenance | 930 | Citrikleen | 0 |
| 405 EMS Wheel & Tire | 400 | PD-680 | 600 |
| 405 EMS Wheel & Tire | 400 | PD-680 | 300 |
| | | TOTAL: | 1008 |

### Type of Waste: Antifreeze

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 832 MWR Auto Hobby | 248 | Antifreeze | 25 |
| | | TOTAL: | 25 |

WASTES DRUMMED AND DISPOSED THROUGH DRMO (Cont'd)

Type of Waste: NDI

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 405 EMS NDI | 966 | Penetrant | 110 |
| 405 EMS NDI | 966 | Emulsifier | 110 |
| 405 EMS NDI | 966 | Mag Part Soln | 55 |
| | | TOTAL: | 265 |

Type of Waste: Speedy Dry

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 405 EMS Phase Dock | 914 | Speedy Dry | - |
| 405 EMS AGE | 404 | Speedy Dry | - |

Type of Waste: Mop Water

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 58 CRS Jet Engine | 931 | Mop Water | - |

Type of Waste: Fuel

| SHOP | BLDG | PRODUCT | QTY (GAL/YR) |
|---|---|---|---|
| 832 TRANS Vehicle Maint | 291 | MoGas | 60 |
| 832 TRANS Vehicle Maint | 291 | Diesel | 24 |
| | | TOTAL: | 84 |

# APPENDIX F

## Master List of Shops

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MASTER LIST OF SHOPS

| SHOP | CONTACT | BUILDING | EXTENSION |
|---|---|---|---|
| **832 TRANS** | | | |
| Allied Trades | Sgt Whitney | 291 | 6085 |
| Refueling Maintenance | MSgt Rork | 353 | 6209 |
| Vehicle Maintenance | MSgt Rork | 291 | 6216 |
| **58 EMS** | | | |
| AGE | SMSgt Withers | 930A | 3463 |
| Armament Systems | SMSgt Reid | 926 | 7335 |
| Corrosion Control | TSgt Brown | 922 | 6797 |
| Phase Docks | MSgt Hairston | 985 | 3877 |
| **58 CRS** | | | |
| Fuel System Repair | MSgt Byer | 983 | 6473 |
| Hush House | TSgt Johnson | 1016 | 6693 |
| Jet Engine Maintenance | MSgt Bradford | 931 | 6561 |
| Pneudraulics | MSgt Etzler | 931 | 6760 |
| **58 AGS** | | | |
| 310 AMU | TSgt Lishka | 913 | 6326 |
| **405 EMS** | | | |
| AGE | MSgt Isgro | 404 | 3276 |
| Corrosion Control | SSgt Pinto | 922 | 6456 |
| NDI | TSgt Chase | 966 | 6191 |
| Phase Docks | MSgt Deyo | 914 | 6731 |
| Wheel and Tire | TSgt Guthery | 400 | 6179 |
| **405 CRS** | | | |
| Manual Test Station | TSgt Ickes | 417 | 7301 |
| Electric | Mr Healis | 913 | 6198 |
| Jet Engine Maintenance | MSgt Jones | 930 | 3537 |
| Small Gas Turbine | MSgt Baum | 1026 | 6050 |
| **405 AGS** | | | |
| 426 AMU | MSgt Sroessner | 482 | 3324 |

MASTER LIST OF SHOPS (Cont'd)

| SHOP | CONTACT | BUILDING | EXTENSION |
|---|---|---|---|
| **944 CAMS** | | | |
| Pneudraulics | TSgt Tuckett | 999 | 5521 |
| Fuel System Repair | MSgt Van | 1022 | 5562 |
| Propulsion | SMSgt Davis | 993 | 5423 |
| AGE | SMSgt Harvey | 1018 | 5556 |
| Corrosion Control | TSgt Webber | 1018 | 5563 |
| NDI | MSgt Levingston | 1022 | 5544 |
| Wheel and Tire | TSgt Kelley | 1022 | 5540 |
| Phase Docks | TSgt Vanderboegh | 999 | 5537 |
| **832 CES** | | | |
| Entomology | SSgt Nedved | 337 | 3961 |
| Power Production | Mr Stephens | 360 | 6869 |
| Zone 1 - Falcon | TSgt Moore | 921 | 3640 |
| Zone 4 - Tiger | Mr McCorry | 339 | 6091 |
| **832 Medical Group** | | | |
| Dental X-Ray | TSgt Brown | 1130 | 7537 |
| Laboratory | SMSgt Gaines | 1130 | 7547 |
| Medical X-Ray | TSgt Bates | 1130 | 7618 |
| **607 TCTS** | | | |
| AGE | SSgt Duchak | 1382 | 6431 |
| **832 MWR** | | | |
| Auto Hobby | Mr Arvizu | 248 | 6107 |

# APPENDIX G

## Summary of Waste Disposal Practices by Shop

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DISPOSAL PRACTICES BY SHOP FOR LUKE AFB

SHOP: 832 TRANS Allied Trades Building: 291

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | LE |
| Sodium Hydroxide | 400 | DD |
| Paint & Thinner | 160 | DRMO |

TOTAL: 560

SHOP: 832 TRANS Refueling Maintenance Building: 353

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Antifreeze | - | DRMO |
| Rags | - | LE |
| JP-4 | - | REC |
| Oil & Fluid | - | POL |

SHOP: 832 TRANS Vehicle Maintenance Building: 291

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Citrikleen | 180 | OWS |
| Speedy Dry | - | MW |
| Rags | - | LE |
| Motor Oil | 1200 | POL |
| Hydraulic Fluid | 240 | POL |
| Brake Fluid | 12 | POL |
| Transmission Fluid | 300 | POL |
| Diesel | 24 | DRMO |
| Antifreeze | 36 | REC |
| 360 Solvent | 240 | POL |
| MoGas | 60 | DRMO |
| Batteries | - | REC |

TOTAL: 2292

SHOP: 58 EMS AGE Building: 930

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Calla 800 | 660 | OWS |
| Citrikleen | 3000 | OWS |
| Aircraft Soap | - | OWS |
| Rags | - | LE |
| Oil & Fluid | 3600 | POL |

TOTAL: 7260

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 58 EMS Armament Systems Building: 926

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Paclei Gun Cleaner | 600 | D |
| Rags | - | LE |
| TOTAL: | 600 | |

SHOP: 58 EMS Corrosion Control Building: 922

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Polyurethane Paint | 660 | DRMO |
| Rags | - | MW |
| Thinners & MEK | - | REC |
| B&B 1567-C | 180 | DRMO |
| TOTAL: | 840 | |

SHOP: 58 EMS Phase Dock Building: 985

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Kim-Wipe | - | MW |
| Oil & Fluid | 12 | POL |
| TOTAL: | 12 | |

SHOP: 58 CRS Fuel System Repair Building: 983

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| JP-4 | 540 | REC |
| JP-4 | 300 | OWS |
| Rags | - | MW |
| TOTAL: | 840 | |

SHOP: 58 CRS Hush House Building: 1016

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Fluid | - | OWS |
| Oil | - | OWS |
| JP-4 | - | OWS |

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 58 CRS Jet Engine Maintenance Building: 931

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| JP-4 | - | REC |
| Rags | - | LE |
| Mop Water | - | D |

SHOP: 58 CRS Pneudraulics Building: 931

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Kim-Wipes | - | MW |
| PD-680 | 1200 | POL |
| Hydraulic Fluid | 120 | POL |
| TOTAL: | 1320 | |

SHOP: 58 AGS 310 AMU Building: 913

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Speedy Dry | - | MW |
| JP-4 | 4800 | REC |
| Oil | 2400 | POL |
| TOTAL: | 7200 | |

SHOP: 405 EMS AGE Building: 404

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | LE |
| Citrikleen | - | OWS |
| Speedy Dry | - | DRMO |
| Citrikleen (tank) | - | POL |
| Alfakleen (in shop) | - | OWS |
| Citrikleen (on washrack) | 150 | OWS |
| Oil & Fluid | 7500 | POL |
| Citrikleen HD (on washrack) | 150 | OWS |
| Polyurethane Paint | 55 | DRMO |
| Waterfall Paint Booth Water | - | OWS |
| Paint Sludge | - | MW |
| TOTAL: | 7855 | |

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 405 EMS Corrosion Control Building: 922

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | MW |
| Filters | 960 | MW |
| Thinners | - | REC |
| Polyurethane Paint | 660 | DRMO |
| B&B 1567-C Stripper | 90 | DRMO |
| | TOTAL: 1710 | |

SHOP: 405 EMS NDI Building: 966

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Magnetic Particle Solution | 55 | DRMO |
| X-Ray Developer & Rinsewater | 480 | OWS |
| 1,1,1 TCA | - | UIP |
| X-Ray Fixer | 480 | SRDD |
| Penetrant | 110 | DRMO |
| Emulsifier | 110 | DRMO |
| Oil | 120 | POL |
| Developer | 110 | DD |
| | TOTAL: 1465 | |

SHOP: 405 EMS Phase Dock Building: 914

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Oil & Fluid | - | POL |
| Speedy Dry | - | DRMO |
| Rags | - | LE |

SHOP: 405 EMS Wheel & Tire Building: 400

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| PD-680 | 300 | DRMO |
| Rags | - | LE |
| Magnaflux Cleaner | - | UIP |
| PD-680 (bearing room) | 600 | DRMO |
| Fine Organics 8010 | 300 | DRMO |
| | TOTAL: 1200 | |

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 405 CRS Manual Test Station Building: 417

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Freon-113 | 100 | DRMO |

TOTAL: 100

SHOP: 405 CRS Electric Building: 913

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| NiCad Battery Electrolyte | 200 | HT |
| Sulfuric Acid | - | HT |

TOTAL: 200

SHOP: 405 CRS Jet Engine Maintenance Building: 930

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| 7808 Oil | 4 | POL |
| Citrikleen | - | DRMO |
| Carbon Remover | 4 | DRMO |
| PD-680 | 5 | POL |
| Fingerprint Remover | 4 | DRMO |
| Rags | - | LE |

TOTAL: 17

SHOP: 405 CRS Small Gas Turbine Building: 1026

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | LE |
| 7808 Oil | 660 | POL |

TOTAL: 660

SHOP: 405 AGS 426 AMU Building: 482

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Speedy Dry | - | MW |
| Calla 800 | - | DD |
| JP-4 | 2400 | REC |
| 7808 Oil | 1200 | POL |

TOTAL: 3600

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 944 CAMS Pneudraulics Building: 999

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Solvent | - | UIP |
| Hydraulic Fluid | 2 | POL |
| Rags | - | MW |
| Penetone Formula 724 | 20 | POL |

TOTAL: 22

SHOP: 944 CAMS Fuel System Repair Building: 1022

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | MW |
| JP-4 | - | REC |

SHOP: 944 CAMS Propulsion Building: 993

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| PD-680 & 7808 Oil | 10 | POL |
| JP-4 | - | POL |
| Rags | - | LE |
| Oil | 72 | POL |

TOTAL: 82

SHOP: 944 CAMS AGE Building: 1018

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Fuel | 3600 | REC |
| Oil & Fluid | 7200 | POL |
| Rags | - | LE |
| Penetone Formula 724 | 20 | POL |

TOTAL: 10820

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 944 CAMS Corrosion Control Building: 1018

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Polyurethane Paint | 55 | DRMO |
| Thinners | 55 | DRMO |

TOTAL: 110

SHOP: 944 CAMS Phase Docks Building: 999

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Kim-Wipes | - | MW |
| Oil & Fluid | 12 | POL |

TOTAL: 12

SHOP: 832 CES Entomology Building: 337

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Triple-Rinse Water | - | REC |
| Containers | - | MW |

SHOP: 832 CES Power Production Building: 360

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Aerosol Cans | - | MW |
| Diesel | 60 | POL |
| Hydraulic Fluid | 24 | POL |
| 7808 Oil | 180 | POL |
| Motor Oil | 660 | POL |
| Rags | - | MW |
| 90 WT Oil | 24 | POL |
| Antifreeze | 120 | DD |

TOTAL: 1068

SHOP: 832 CES ZONE 1 Building: 921

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Cutting Oil | 60 | POL |

TOTAL: 60

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 832 CES Zone 4 Building: 339

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Rags | - | MW |
| Paints and Thinners | - | DRMO |

SHOP: 832 Med Grp Dental X-Ray Building: 1130

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| X-Ray Fixer | 60 | SRDD |
| X-Ray Developer | 60 | DD |

TOTAL: 120

SHOP: 832 Med Grp Laboratory Building: 1130

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Reagents | - | DD |

SHOP: 832 Med Grp Medical X-Ray Building: 1130

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| X-Ray Developer | 480 | DD |
| X-Ray Fixer | 480 | SRDD |

TOTAL: 960

SHOP: 607 TCTS AGE Building: 1382

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Motor Oil | 20 | POL |

TOTAL: 20

DISPOSAL PRACTICES BY SHOP FOR LUKE AFB (Cont'd)

SHOP: 832 MWR Auto Hobby Building: 248

| WASTE PRODUCT | QTY(GAL/YR) | DISPOSAL |
|---|---|---|
| Antifreeze | 25 | DRMO |
| Oil & Fluid | 4000 | POL |
| Aircraft Soap | 300 | OWS |

TOTAL: 4325

LEGEND:

| | |
|---|---|
| DRMO | DRUMMED AND DISPOSED THROUGH DRMO |
| SRDD | SILVER RECOVERY THEN DOWN DRAIN |
| NDD | NEUTRALIZED THEN DOWN DRAIN |
| POL | DISPOSED AS POL |
| UIP | USED IN PROCESS |
| OWS | OIL/WATER SEPARATOR |
| REC | RECYCLED |
| MW | MUNICIPAL WASTE |
| DD | DOWN DRAIN |
| LE | LINEN EXCHANGE |
| HT | HOLDING TANK |
| D | DRUMMED AND DISPOSED ACCORDING TO ANALYTICAL RESULTS |

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